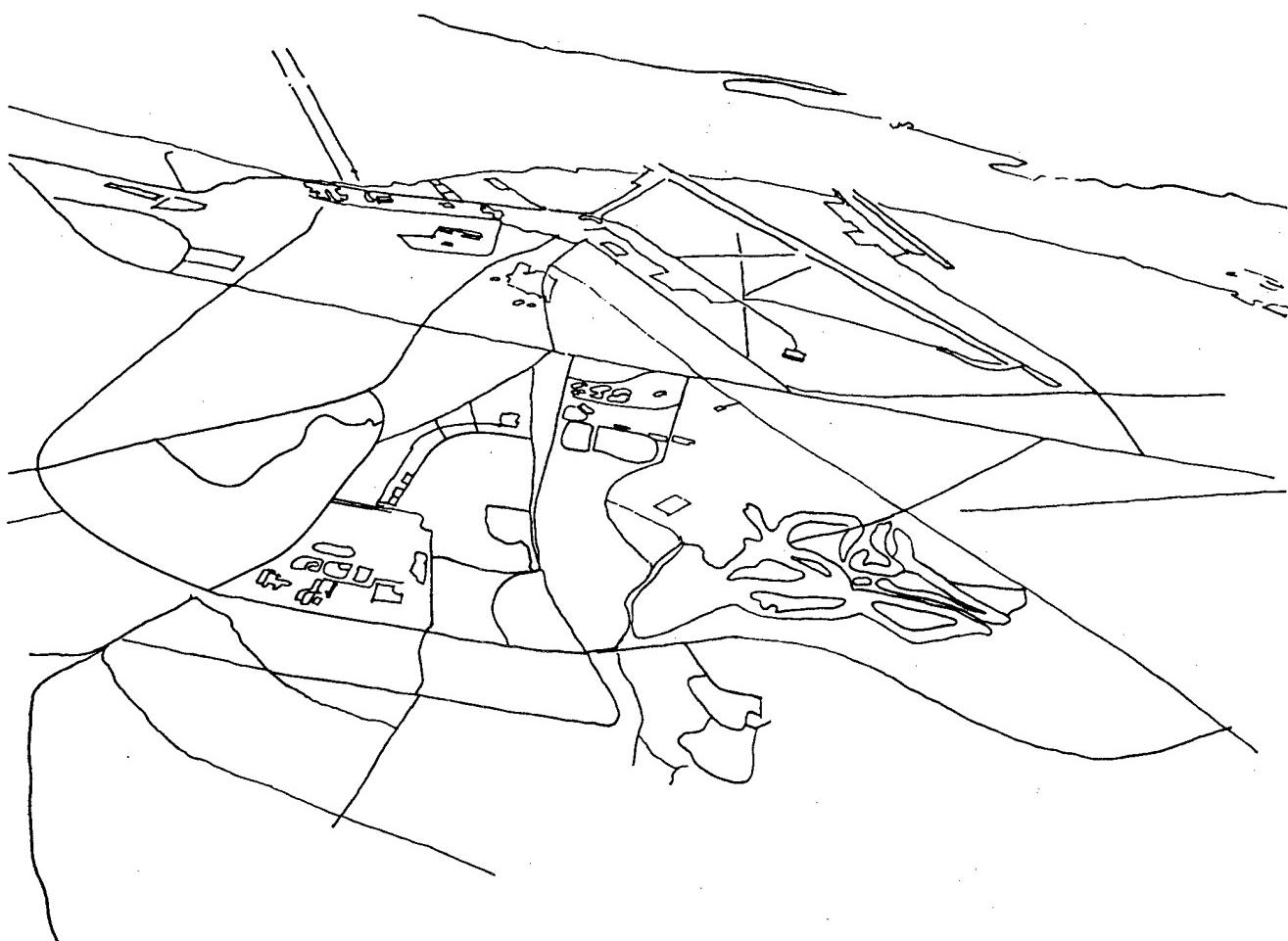


Assessment of Potential Archaeological Collections Facility Sites at Edwards Air Force Base

Archaeological Curation-Needs Assessment
Architectural-Archaeological Report No. 1



DISTRIBUTION STATEMENT A
Approved for Public Release
Distribution Unlimited



U.S. Army Corps of Engineers
St. Louis District
Mandatory Center of Expertise for the
Curation and Management of Archaeological Collections

20010524 059

REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188
<p>Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.</p>			
1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED	
	1998	Final Report	
4. TITLE AND SUBTITLE Assessment of Potential Archaeological Collections Facility Sites at Edwards Air Force Base		5. FUNDING NUMBERS	
6. AUTHORS Richard L. Siemons (Michael K. Trimble and Christopher B. Pulliam, Series Editors)			
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) U.S. Army Corps of Engineers, St. Louis District 1222 Spruce Street (CEMVS-PD-C) St. Louis, Missouri 63103-2833		8. PERFORMING ORGANIZATION REPORT NUMBER Archaeological Curation Needs Assessment Architectural-Archaeological Report No. 1	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) U.S. Air Force Edwards Air Force Base Lancaster, California		10. SPONSORING/MONITORING AGENCY REPORT NUMBER	
11. SUPPLEMENTARY NOTES Report available from the U.S. Army Corps of Engineers, St. Louis District (CEMVS-PD-C)			
12a. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited		12b. DISTRIBUTION CODE	
13. ABSTRACT (Maximum 200 words) In order to comply with 36 CFR Part 79, Curation and Management of Federally-Owned and Administered Archeological Collections, Edwards Air Force Base (AFB) archaeological materials must be properly housed in a facility capable of providing for their long-term care. The present base repository, however, does not meet the requirements in 36 CFR Part 79. Therefore, Edwards AFB personnel requested the U.S. Army Corps of Engineers Mandatory Center of Expertise for the Curation and Management of Archaeological Collections, St. Louis District, to assist them in determining an appropriate plan of action to correct this problem. On June 15, 1994, architects and archaeologists from the St. Louis District evaluated the feasibility of one existing structure on Edwards AFB to serve as a curation facility. Six sites also were assessed as potential curation-facility construction sites. The existing building was determined to be inappropriate for a curation facility, but three of the six sites would provide good locations for a facility. Finally, St. Louis District architects prepared preliminary drawings, including cost estimates, for a curation facility on Edwards AFB.			
14. SUBJECT TERMS Archaeology, curation, collections management, 36 CFR Part 79		15. NUMBER OF PAGES 30	16. PRICE CODE
17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT UL

Assessment of Potential Archaeological Collections Facility Sites at Edwards Air Force Base

by

Richard L. Siemons, AIA

with contributions by Rhonda Lueck, Lynn Neher,
and Dawayne Sanders, P.E.

Michael K. Trimble
Christopher B. Pulliam
Series Editors

Prepared for Edwards Air Force Base,
Lancaster, California

U.S. Army Corps of Engineers
St. Louis District Mandatory Center of Expertise for the
Curation and Management of Archaeological Collections

Archaeological Curation-Needs Assessment
Architectural-Archaeological Report No. 1
1998



Edited and produced by Statistical Research, Inc.
P.O. Box 31865
Tucson, Arizona 85751-1865

Copy editor: Teresita Majewski
Production manager: Lynne Yamaguchi
Production assistants: Karen Barber, S. Greg Johnson

Contents

List of Figures	v
List of Tables	vii
1. Introduction	1
2. Building 16 (a.k.a. P-1)	3
Assessment	4
Structural Adequacy	4
Environmental Controls	4
Pest Management	5
Security	5
Fire Detection and Suppression	5
Comments	5
Recommendations	6
Summary	6
3. Site Inspections	7
Assessments	7
Site 1: Knoll by Building 16	7
Site 2: East Slope of Ridge near Building 16	7
Site 3: Intersection of Access Road and Lancaster Blvd.	7
Site 4: Hill above Future Flight Test Center Museum	7
Site 5: Two Areas near Roseburg Gym, Building 2200	9
Site 6: Contractors' Field Office Area	9
Site Restrictions	9
4. Proposed Building Design for a New Archaeological Collections Facility	11
Building Design	11
Architectural Program	11
Preliminary Budget	11
Functional Areas	13
Materials-Handling Area	13
Washing Room	13
Drying Room	13
Processing Room	13
Artifact-Examination Room	13
Collections-Storage Room	16
Base Archaeologist's Office	16
Contractors' Office	16

Drawings	16
Cost Estimate	17
5. Summary and Recommendations	21

List of Figures

Figure 1. Exterior view of the east side of Building 16	3
Figure 2. Floor plan (not to scale) of Building 16	4
Figure 3. View of the north side of Building 16	5
Figure 4. Potential sites for a new archaeological collections facility at Edwards AFB	8
Figure 5. Proposed floor plan for a new archaeological collections facility at Edwards AFB	12
Figure 6. Detailed partial floor plan (top) of the washing room, along with a cross-sectional view (bottom) of potential room furniture and equipment	14
Figure 7. Detailed partial floor plan of the processing room	15
Figure 8. Cross-sectional view of potential processing-room furniture and equipment	16
Figure 9. Elevation sketches of a potential preengineered metal collections facility at Edwards AFB	17
Figure 10. Elevation sketches of a potential concrete-masonry collections facility at Edwards AFB	18

List of Tables

Table 1. Summary of Site Inspections at Edwards AFB	8
Table 2. Preliminary Budget Range for Archaeological Collections Facility at Edwards AFB	13
Table 3. Construction Costs for a Preengineered Metal Building at Edwards AFB	19

Introduction

Federal archaeological collections are an important, nonrenewable cultural resource. However, curation of these materials has been largely substandard or ignored for 50 years or more. The result has been the progressive deterioration of these resources, which include many unique prehistoric and historical-period objects. A key factor relevant to the preservation of any archaeological collection is the repository in which it is stored. The on-base, historical-period structure that currently houses Edwards Air Force Base (AFB) archaeological collections, for reasons discussed below, is an inadequate repository. The inadequate curation of these collections violates federal law and prevents their use for educational and scientific purposes. Proper curation can ensure that these nonrenewable resources are preserved for future generations.

Edwards AFB is responsible for the management of archaeological collections and historical-period resources located on or recovered from the installation. This responsibility is mandated through numerous legislative enactments, including the Antiquities Act of 1906 (P.L. 59-209), the Historic Sites Act of 1935 (P.L. 74-292), the Reservoir Salvage Act of 1960 (P.L. 86-523), the National Historic Preservation Act of 1966 (P.L. 89-665), and the Archaeological Resources Protection Act of 1979 (P.L. 96-95). Executive Order 11593 (U.S. Code 1971) and amendments to the National Historic Preservation Act in 1980 provide additional protection for these resources.

All federal agencies are required to adequately curate all recovered archaeological materials and associated records in perpetuity according to the standards established in 36 CFR Part 79 (Curation of Federally-Owned and Administered

Archeological Collections). A repository must meet the requirements stipulated in 36 CFR Part 79 to be deemed satisfactory. Satisfactory repositories perform the following six tasks.

1. Accession, label, catalog, store, maintain, inventory, and conserve collections on a long-term basis, using professional museum and archival practices, and maintain complete and accurate records of collections.
2. Identify, evaluate, and document collections.
3. Store and maintain collections in appropriate containers, with controlled environmental conditions and an adequate security system.
4. Periodically inspect collections and, when necessary, research and incorporate proper preservation methods.
5. Provide regulated access to collections and facilities so that approved visitors can research the artifacts and documents.
6. Manage, clean, stabilize, conserve, and preserve collections.

Complete records of collections include details of acquisition, artifact catalogs, artifact inventory lists, field notes, site forms and reports, photographs, negatives, slides, and maps.

A satisfactory repository must also be structurally adequate. It should contain appropriate facilities for storage, processing, and research. As development continues on Edwards AFB, each parcel of land affected is investigated for the presence of cultural resources. Contractors are hired to conduct archaeological surveys and, when necessary, initiate full-scale excavations for data recovery. Prior to fieldwork, existing

archaeological records and sites are researched to aid in developing an effective approach to the work. Contractors require office space with ready access to the records repository and the installation archaeologist's office.

36 CFR Part 79 also states that an official of a federal agency must conduct an evaluation to determine if a repository has the capability to provide long-term curatorial services. In case Building 16, the current repository for archaeological collections on Edwards AFB, was found unsuitable, the installation archaeologist investigated ways to replace it with a facility consistent with the standards set forth in 36 CFR Part 79. Two options were considered. The first option was to move the repository into a different structure on the base that is more adequate; the second was to construct a new structure with the necessary specifications.

In order to assist Edwards AFB in complying with federal curation laws and regulations, an evaluation team from the U.S. Army Engineer District, St. Louis, performed the following tasks as part of this project. The team, consisting of an architect, an archaeologist, and a biologist, evaluated the adequacy of Building 16 as to its

potential suitability as a long-term repository. Six areas of land on the base (Sites 1–6) were also inspected in order to recommend a location for a new facility if Building 16 was found to be inadequate. The evaluation was performed on June 15, 1994.

This report represents the findings of the evaluation and includes four chapters following this introduction. Chapter 2 presents the evaluation of Building 16, and Chapter 3 summarizes site inspections of six potential sites for a new archaeological collections facility. According to the evaluation, the current repository facility (Building 16) at Edwards AFB fails to meet minimum collections-management standards and lacks sufficient space for contractor research. Construction of a new facility has been proposed. A preliminary building design for a new archaeological collections facility is proposed in Chapter 4, which also includes descriptions of interior functional areas and cost estimates for new construction. Chapter 5 presents a summary of the work performed and the recommendations of the St. Louis District regarding archaeological collections facilities at Edwards AFB.

Building 16 (a.k.a. P-1)

Building 16 was constructed in 1942 as a home for the commanding general; it is the oldest on-base residence. It was originally designated Building P-1, was later renumbered Building 16, and is also known as Muroc Manor. The structure became a location for social gatherings and parties; today the building is not used. Isolated from the remainder of the base, Building 16 (Figure 1) sits on a ridge overlooking the base. Unfortunately, its location causes the structure to be prone to pest infestations and lightning strikes. Several archaeological sites, including homesteads, are located in

the area. The former residence contains four bedrooms, three bathrooms, a utility room, kitchen, dining room, living room with a fireplace, and a family room (Figure 2). There is a half basement, formerly used as a garage, with a ground-level entrance door on the north end of the house (Figure 3) and a crawl space under the south end. A concrete patio at the rear of the structure covers what was once an in-ground swimming pool. It is reported that the structure will be nominated for listing in the National Register of Historic Places (NRHP).

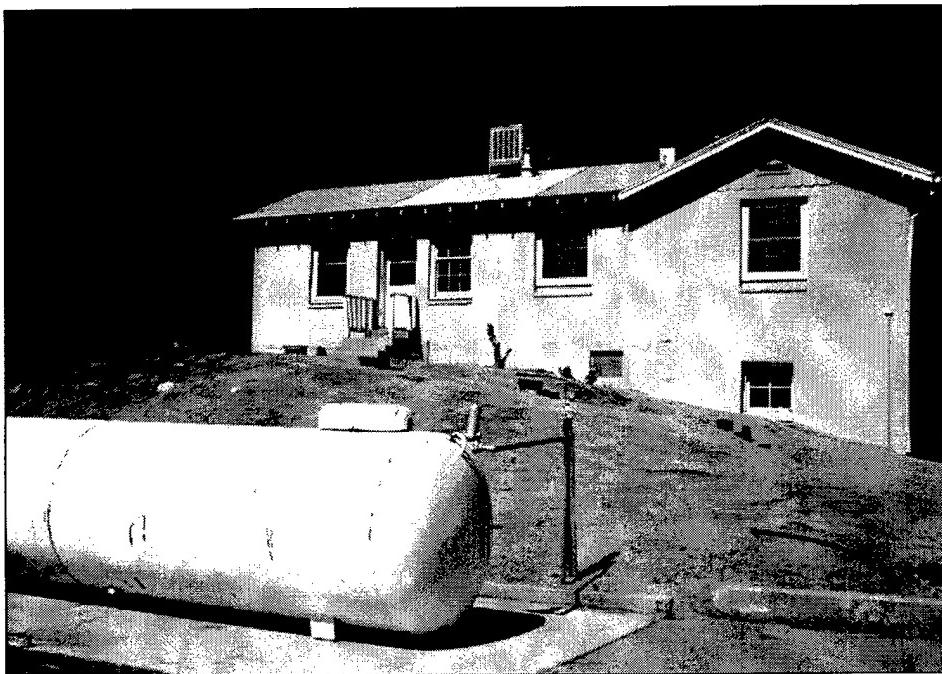


Figure 1. Exterior view of the east side of Building 16. Disabled-persons' access to the first floor will require a ramp.

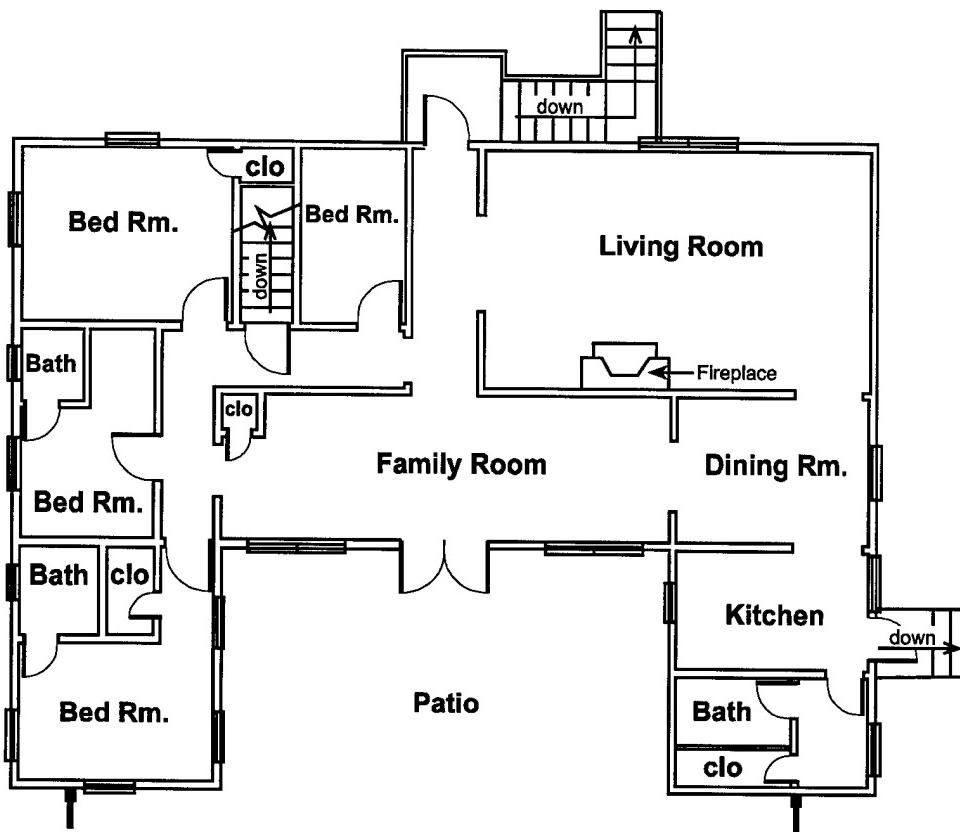


Figure 2. Floor plan (not to scale) of Building 16.
Note the two picture windows in the family room and the one in the living room.

Assessment

Structural Adequacy

The exterior walls and foundation are adobe. These show evidence of damage repaired in the past, and numerous cracks are still present throughout the structure. The roof is composition shingle over a wooden deck-and-joist structure. The window frames are wooden and show signs of leakage. The window sills are brick, covered with a cementlike material that is spalling. The first floor of the structure is inaccessible to disabled individuals (see Figure 1).

Windows are abundant throughout the house and include several picture windows (see Figure 2). The floors are wood framed; floor coverings include carpet, linoleum, and wood. Interior walls are wood framed, with a plaster and adobe

finish. Ceilings of plaster, wood panel, and acoustic tile are present. The acoustic tiles may contain asbestos.

Tap water from the kitchen and bathroom faucets was dark and appeared to have a high iron or mud content. Further investigation of the water supply is necessary to determine if there is a potable water supply at the structure.

Environmental Controls

Temperature and humidity levels have not been monitored or controlled since the structure has been vacant. Heating is by propane gas, and cooling is provided by three roof-mounted air-conditioning units. The relative humidity cannot be properly controlled with the existing equipment in the structure. Lighting is provided by incandescent bulbs, which is inappropriate for museum collections, particularly records.



**Figure 3. View of the north side of Building 16.
Note the picture window and the ground-level entrance.**

Pest Management

No integrated pest-management system has been implemented for this building. Rodents and insects inhabit the structure, as evidenced by droppings and carapaces. Poisonous and nonpoisonous snakes, insects, black widow spiders, rodents, coyotes, and badgers are common to the area and could easily enter the structure through the crawl space on the south side or through cracks in the foundation wall.

Security

Access to the base is controlled by a 24-hour, guarded checkpoint. Building 16 is secured by key locks on two of the exterior, single, wood-panel doors and one exterior, double door at the rear of the structure. The interior door from the main floor of the structure to the basement stairs was padlocked at the time of the site visit.

Fire Detection and Suppression

The structure is equipped with smoke detectors in several rooms and fire extinguishers in two

rooms. The structure does not have an automatic fire-suppression system, which is mandatory in modern collection centers.

Comments

1. Building 16 was constructed as a residence, with a residential floor-loading design criterion that is typically 40 lbs/ft².
2. It is unlikely that the structure was designed to current seismic-design standards. Existing cracks in the walls may have been caused by earthquakes. Substantial and expensive structural-system additions will be required to reinforce the building and meet minimum standards for storing a lithics collection (250 lbs/ft²).
3. Several large picture windows allow the entry of natural light, which is not conducive to the long-term preservation of archaeological collections. This could be resolved by sealing the window openings with an opaque material, but doing this would seriously compromise the

structure's historic character and be inconsistent with submittal for inclusion in the NRHP.

4. Water stains on the ceilings of several rooms suggest roof leaks, and the roof shows signs of having been patched many times.
5. The structure lacks a proper fire-detection and -suppression system.

6. An integrated pest-management program is not in place, and cracks in the foundation, walls, and the fireplace opening provide access for pests.

In sum, Building 16 is not suitable as a repository for archaeological collections in its present condition. It would require substantial modifications, including those noted in the following recommendations.

Recommendations

1. Renovate the entire structure, including the foundation, floor, and walls, using design loads following collections facility criteria and current seismic-design standards. If the structure is to be seriously considered for nomination to the NRHP, design plans should be in accordance with the Secretary of the Interior's Standards for Rehabilitation of Historic Buildings.

2. Replace existing windows with insulated glass. Seal frames at joints to prevent water and pests from entering the interior. Filter natural light to prevent damage to collections by ultraviolet light. Security devices (e.g., wired windows or bars over windows) also should be installed to ensure that collections are properly secured. If the building is nominated to the NRHP, all rehabilitation work should be performed in accordance with the proper standards

and approved in advance by the California State Historic Preservation Officer.

3. Inspect the structure for the presence of asbestos. If asbestos is found, remove it in accordance with EPA guidelines. Repair cracks in the walls and ceilings. Install a temperature and humidity monitoring and controlling system.
4. Install adequate security and fire-detection and -suppression systems. Ensure that the fire-detection system includes smoke alarms and heat sensors wired into the base fire department.
5. Implement an integrated pest-management system that includes monitoring and control. Seal the fireplace and crawl space to prevent the entrance of pests.
6. The main floor of the structure should be made accessible to people with disabilities. Currently, access to the first floor requires walking up steps. Site modifications in the form of a ramp or a mechanical lift will be required. To be considered accessible, the interior of the building will require significant modifications, such as enlarged rest rooms, doorways, and hardware.

Summary

Building 16 will require substantial and costly modifications before it can be used as an archaeological collections facility. If modifications are done to current standards, they will likely alter the historic character of the structure. Even with modifications, the structure would barely be suitable as an archaeological collections facility. It is recommended that another facility be found, or other sites be investigated and a new building designed and constructed to provide a solution to the archaeological curation needs of Edwards AFB.

Site Inspections

Six potential construction sites for a new archaeological collections facility were identified and visited on June 15, 1994 (Figure 4). The findings at each site are presented below with the understanding that, as site selection is narrowed down, more-detailed site analyses should be performed. A summary of the site inspections is given in Table 1. Brief assessments of the six sites are given below.

Assessments

Site 1: Knoll by Building 16

This prominent knoll, which is visible from Lancaster Boulevard, is one of the higher elevations on Edwards AFB. It is located approximately 150 feet southeast of Building 16, making an extension of the access road possible. Despite its favorable location, the base probably will not allow this site to be developed as an archaeological collection facility because of its high visibility.

Site 2: East Slope of Ridge near Building 16

An archaeological collections facility at this location would benefit from the existing access road and utilities available at Building 16. The site is just downhill from Building 16 and uphill from an adjacent residential subdivision, which has a high traffic flow. The potential for vandalism because of the site's proximity to the residential subdivision, along with the high traffic

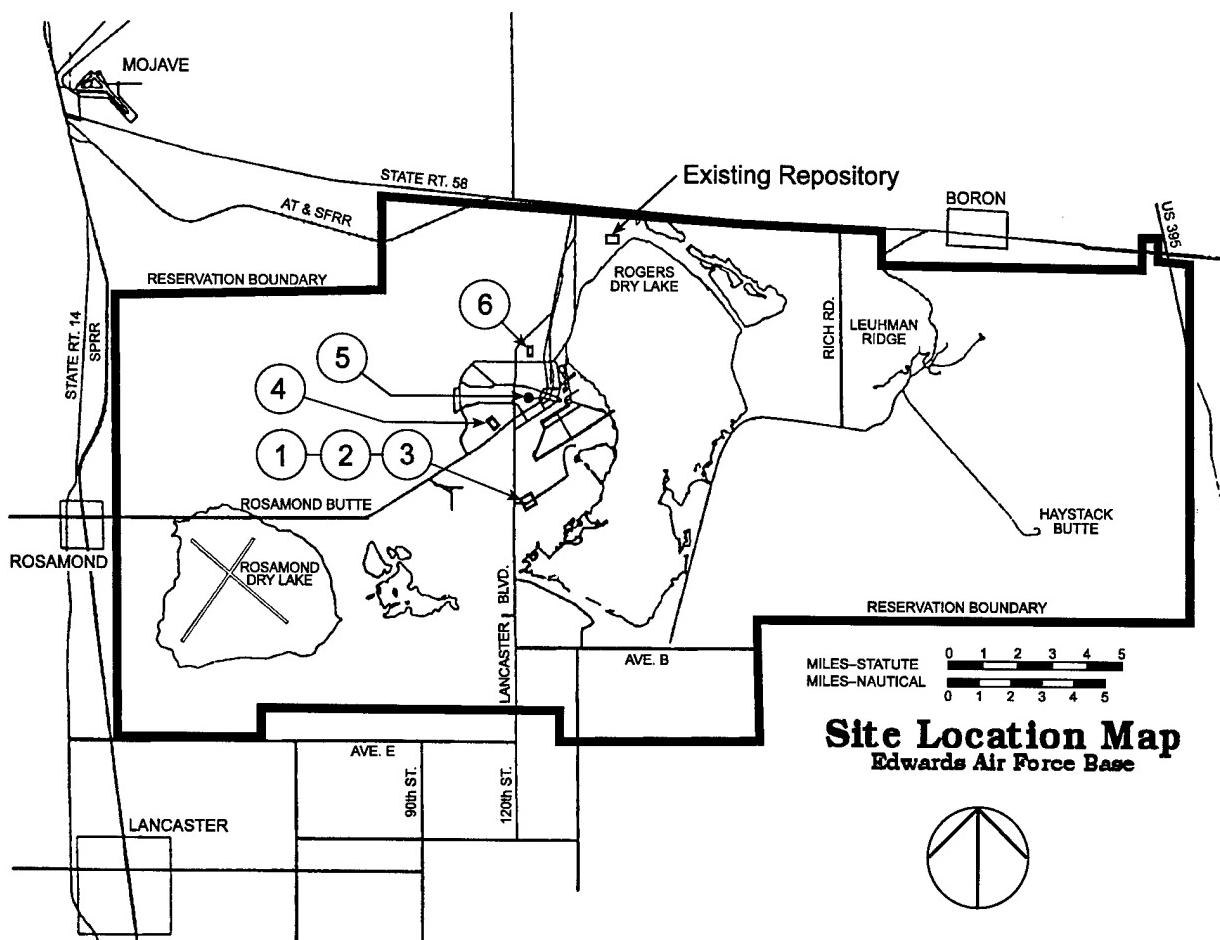
flow make this location unsuitable for a collection facility. Furthermore, the potential disposal of chemicals used in the collections facility could pose a threat to the residents of the subdivision.

Site 3: Intersection of Access Road and Lancaster Blvd.

This site is open and somewhat remote, with very little slope to the ground. It is located at the intersection of the access road that leads to Building 16 and Lancaster Boulevard. Utilities are nearby, and the site is far enough away from the residential area that no adverse reaction from residents is likely. Vehicular traffic generated by the subdivision would pass the site frequently. This site would provide a suitable location for an archaeological collections facility.

Site 4: Hill above Future Flight Test Center Museum

The base archaeologist believes that about 5 acres of land near the future Flight Test Center Museum could be obtained for construction of a collections facility. Utilities are nearby, and the site is highly visible to the public. The soil here is reported to be stable, but bedrock may be close to the surface. The site, which is at a high elevation, is just southwest of the future flight test center museum. There are several prehistoric archaeological sites nearby. The site is approximately 1,000 feet from Rosamond Road and can be accessed by 4-wheel-drive vehicles. A paved access road and parking area would be required if this site is selected. The location



**Figure 4. Potential sites for a new archaeological collections facility at Edwards AFB.
See text for descriptions of Sites 1–6.**

**Table 1.
Summary of Site Inspections at Edwards AFB**

Site	Utilities				Paved Road?	Parking?	Compatible with Neighborhood?	Comments
	Water	Sewer	Natural Gas	Internet				
1. Knoll SE of Bldg. 16	yes	yes	no	no	close	no	yes	visible site
2. Between Bldg. 16 & subdivision	yes	yes	no	no	no	no	no	adjacent to housing
3. Intersection	yes	yes	yes	no	yes	no	yes	looks "industrial"
4. Hill above future museum	yes	yes	yes	yes	no	no	yes	desirable site
5. Near Rosenburg Gym	yes	yes	yes	yes	yes	yes	yes	commercial
6. Contractor's field office area	yes	yes	yes	yes	yes	no	yes	contractors close

Note: The site numbers in Table 1 correspond to the numbers on Figure 4.

provides a good site for an archaeological collections center, and the cultural nature of the land use is consistent with a future flight test center museum.

Site 5: Two Areas near Roseburg Gym, Building 2200

These areas are close to utilities, a cafeteria, and other buildings and facilities. A paved road and parking area are also nearby. These sites have advantages over the others visited, including utility connections, vehicle access, and parking. However, this site is not entirely compatible with the cultural nature of the collections facility, because of the other buildings and facilities in the area.

Site 6: Contractors' Field Office Area

This site, adjacent to a large rock pile, has a gentle slope with good drainage. Utilities are

reported to be nearby. Archaeology and biology laboratories used by contractors are housed in temporary structures, and a paved access road serves the site. The proximity to contractors doing cultural resource work at the base is viewed as a desirable characteristic of this site. However, the industrial appearance of the site detracts from its potential use for the location of an archaeological collections facility.

Site Restrictions

There may be other restrictions affecting the availability and potential use of the six sites listed above. The base civil engineer and the planning and zoning board would have such information. Any future study of the collections center issue should incorporate their comments.

Proposed Building Design for a New Archaeological Collections Facility

Building Design

In fulfilling the requirements of this study, the St. Louis District developed a preliminary building design for a new archaeological collections facility (Figure 5). Site inspections were followed by extensive discussion between the base archaeologist and St. Louis District personnel. The discussions produced a list of requirements that a proposed archaeological collections building should meet. The following architectural program was developed.

Architectural Program

The archaeological collections facility must accommodate the long-term storage of an assortment of archaeological materials, particularly lithics; the curation of organics, paper records, photographs, maps, reports, and videotapes must also be provided for. The facility will serve as the Edwards AFB long-term repository, processing station, and office for the curator of archaeological materials. The structure will be a research and office facility for contractors, and possibly for students, scholars, and the general public. The collections at Edwards AFB are expected to increase significantly in the near future, and the structure should be capable of meeting the demand for additional storage space. The facility will provide

for all of the curation needs of archaeological materials, such as cleaning, processing, documenting, and long-term storage.

The general requirements specified in the architectural program were supplemented with the following descriptions of areas needed:

1. adequate storage space, primarily for lithics, that can be easily expanded;
2. an office for the base archaeologist and curator;
3. an office or work area for contractors doing research;
4. a conference room;
5. a library;
6. a security system;
7. fire-detection and -suppression systems;
8. rest rooms; and
9. a laboratory, including space for washing, drying racks, examination tables, a supplies storage room, "dirty" storage for incoming artifacts, and an exhibit area, if possible.

Preliminary Budget

The preliminary budget range established by Edwards AFB is shown in Table 2.

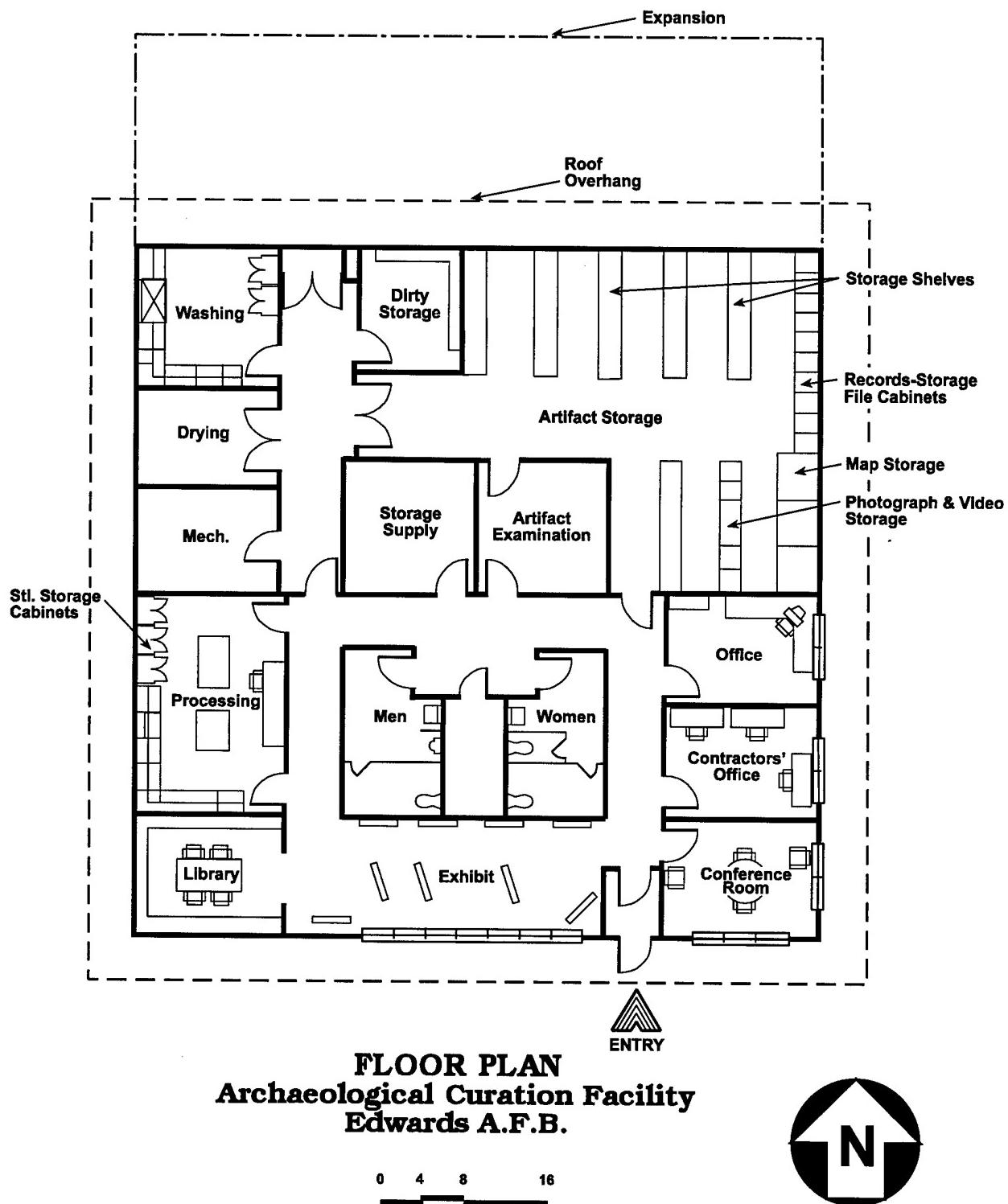


Figure 5. Proposed floor plan for a new archaeological collections facility at Edwards AFB.

Table 2.
Preliminary Budget Range for
Archaeological Collections Facility at
Edwards AFB

Item	Cost
New building	\$500,000–750,000
Equipment	\$100,000–150,000
Site development	\$75,000–112,500
Total construction cost	\$675,000–1,012,500
Professional fees	\$70,000–105,000
Administrative costs	\$7,000–12,000
Contingencies (~15%)	\$101,250–151,875
Total budget	\$883,250–1,281,375

Functional Areas

Materials-Handling Area

Materials will be delivered to the rear (north end in Figure 5) of the facility, where they will be unloaded, washed, dried, processed, and placed into long-term storage.

The predominant material class of artifacts will be lithics, which will be placed in standard-sized boxes that measure 10 x 12 x 12 inches. Boxes will be stacked two high on each shelf. When full, it is estimated that each box will weigh no more than 45 pounds. Materials will be moved through the structure on mobile pushcarts; the use of forklift trucks will not be necessary.

Most materials arriving at the facility will be unloaded and placed in the washing room to await cleaning. After being washed, they will be dried, processed, and placed in the storage room. Artifacts not to be cleaned immediately will be placed in the temporary storage room (dirty storage) located adjacent to the rear entrance. Artifacts that arrive clean will be examined and placed in the artifact-processing room. In all cases, artifacts will be clean, dust free, bagged, properly labeled, and checked against the relevant records prior to being placed in long-term storage. Records will include at least one paper copy and a computer record.

Washing Room

Artifacts that can be washed will be brought to the washing room (Figure 6 and see Figure 5). The cleaning process will consist of removing objects from their delivery containers (boxes and bags), placing them on screens for examination, and washing them with water (by spraying or immersion).

Drying Room

After being washed, materials will be placed on carts and wheeled into the drying room to be air dried by a constant flow of air through the room. Fans will be located in the adjacent mechanical room to maintain airflow without blowing directly onto the artifacts.

Processing Room

A variety of activities will take place in the artifact-processing room (Figures 7 and 8). Materials will be sorted, bagged, boxed, and checked against relevant records for possible mistakes. A limited amount of photography may take place in this room. Those artifacts with no records or with incomplete records will have documentation created or corrected, respectively. Mild cleaning, such as vacuuming, will also take place. When materials leave the processing room for long-term storage they will have been processed according to the standards and requirements of 36 CFR Part 79.

Artifact-Examination Room

Research activities involving the physical examination of artifacts will take place in this room, which is adjacent to the artifact-storage room. Visitors to the facility will be allowed access into the examination room but not into the storage room. Examination of artifacts by visitors will be subject to monitoring by a staff member through windows along the corridor side of the room.

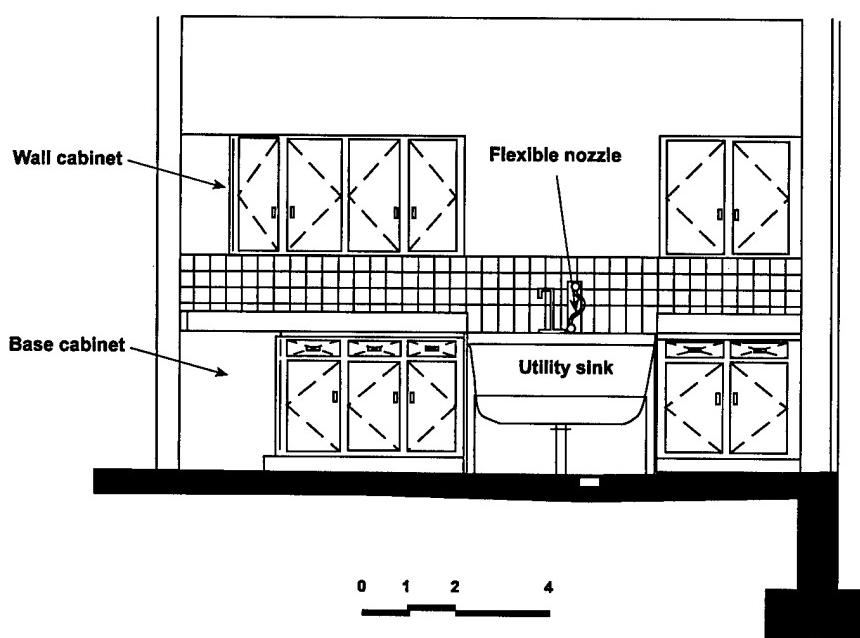
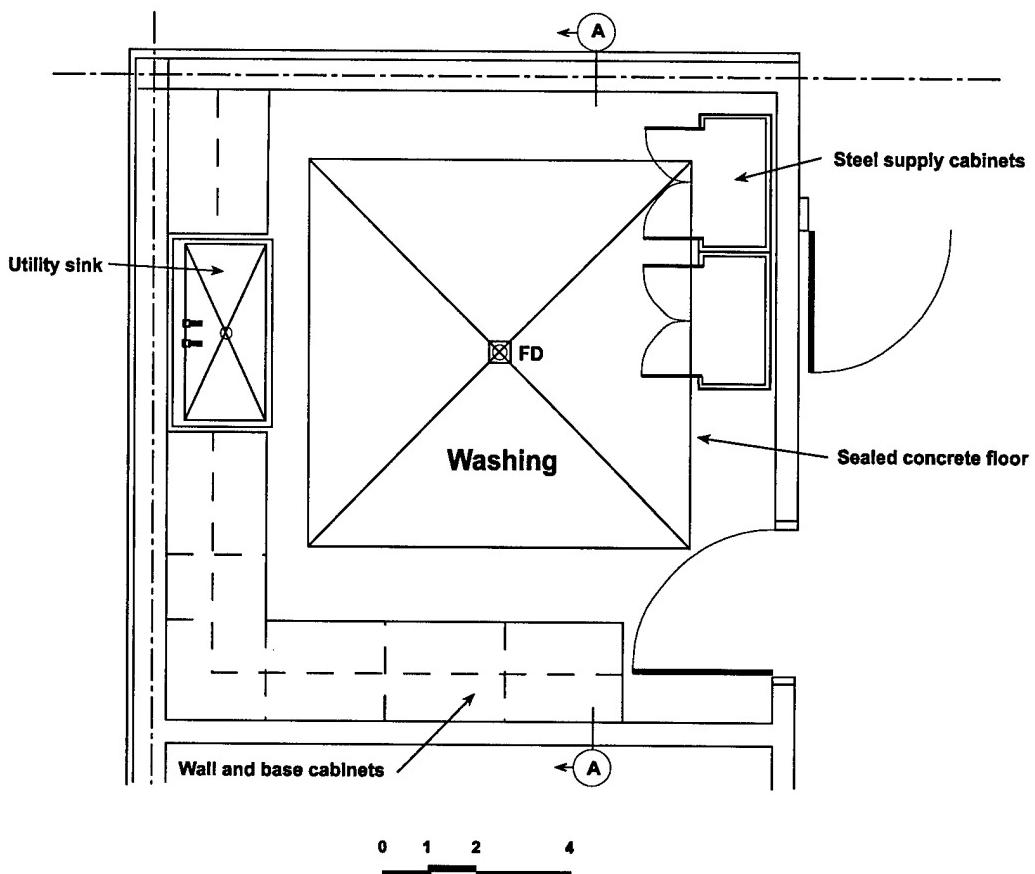


Figure 6. Detailed partial floor plan (top) of the washing room, along with a cross-sectional view (bottom) of potential room furniture and equipment.

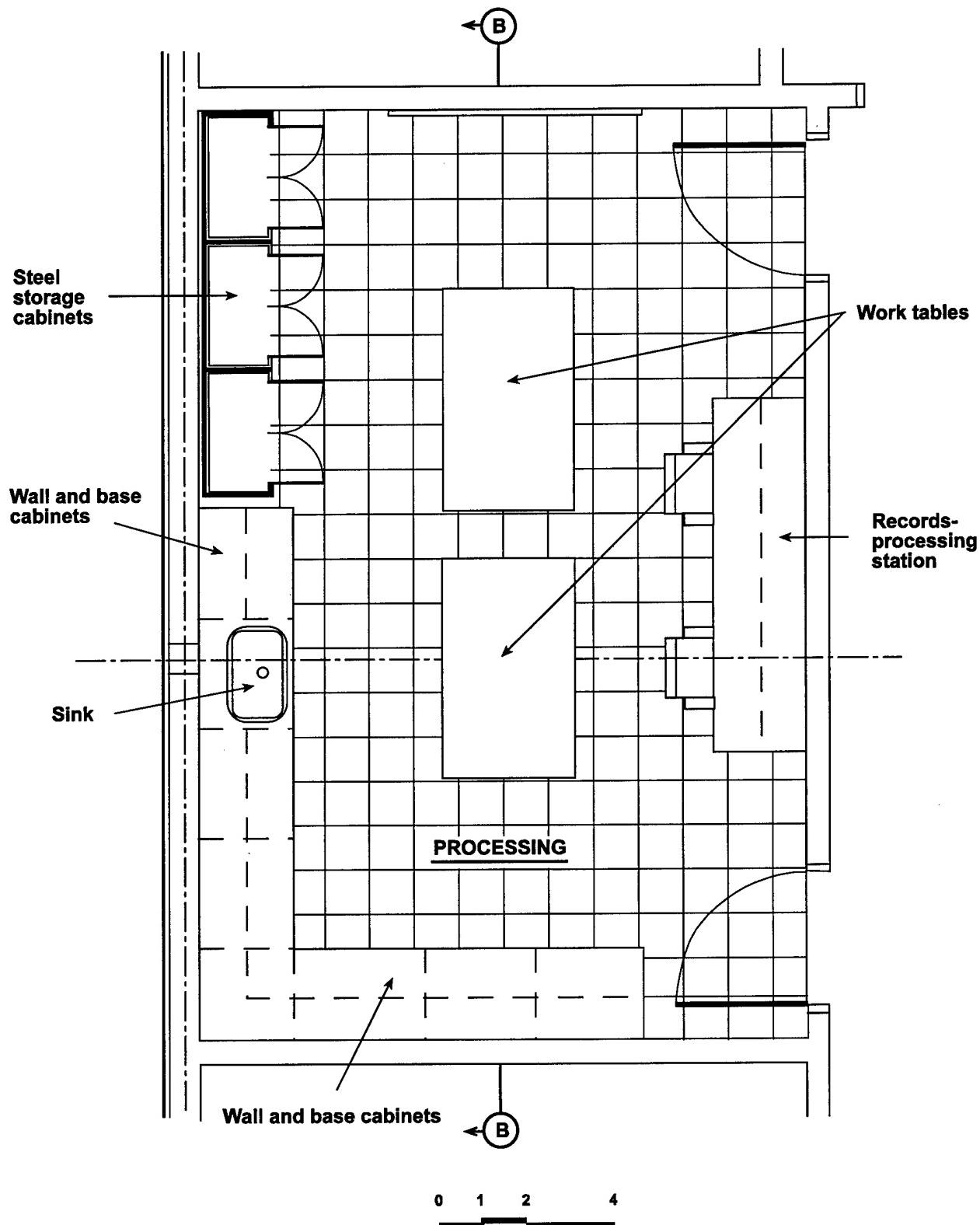


Figure 7. Detailed partial floor plan of the processing room.

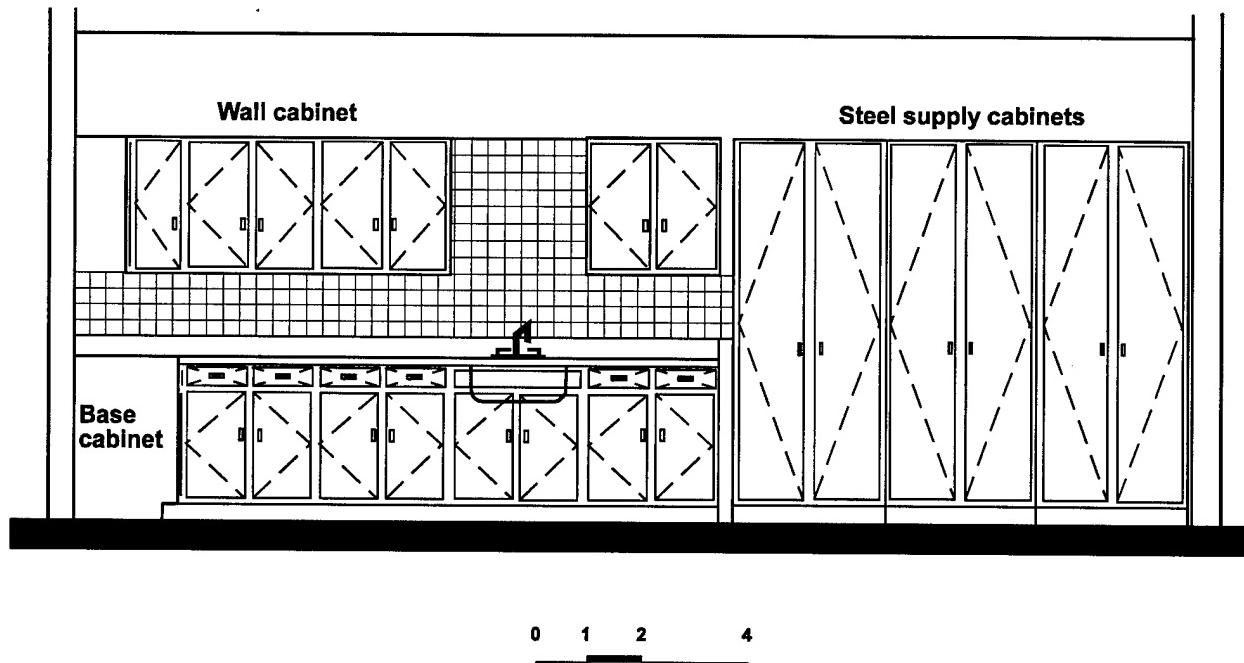


Figure 8. Cross-sectional view of potential processing-room furniture and equipment.

Collections-Storage Room

All artifacts and associated documentation will be stored in this room. Collections may be separated by object type or size. The majority of artifacts will be stored in standard-sized, acid-free boxes or polyethylene containers on open shelving. Each aisle will be clearly labeled or numbered, as will each shelf. Reports, maps, and paper records will be placed in vertical file cabinets or map cases. Photographic prints will be placed in clear plastic, archival sleeves and cataloged by project.

Lighting in the collections-storage room will be provided by fluorescent fixtures with ultraviolet filters around each tube.

Base Archaeologist's Office

The office of the base archaeologist will be equipped with a telephone, computer, printer, and fax machine.

Contractors' Office

Contractors doing research at the base will use this room. A computer will be made available

for their use, and contractors will have access to the collection information present in the facility. The room will accommodate multiple users.

Drawings

The preceding drawings illustrate a proposed architectural design for a curation facility consistent with the program and cost data that have been developed. The design of the structure is of a general nature in order to allow it to be adapted for any of the six sites visited. The structure measures 66 x 66 feet (4,356 ft²) and is alternatively illustrated in elevation sketches as both a preengineered, metal structure (Figure 9) and a concrete-masonry (CMU) structure (Figure 10).

Some preference was expressed by base archaeologists for a metal structure, in consideration of the frequent seismic activity in California. However, CMU walls can be reinforced to resist lateral movement. There is a cost advantage in using a preengineered, metal structure, in that the design cost is lower, and the wall thickness will be less for the same amount of insulation. There are many metal buildings on the base, and the curation facility therefore will be

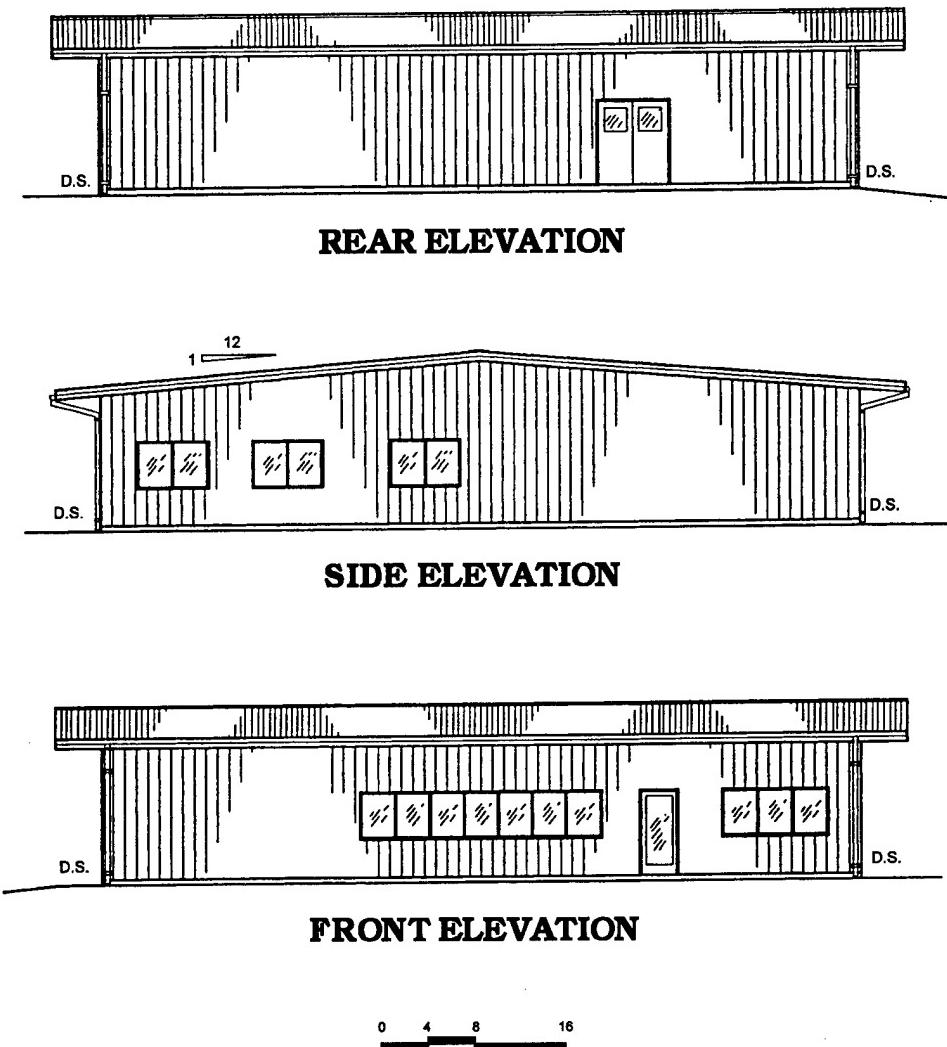


Figure 9. Elevation sketches of a potential preengineered metal collections facility at Edwards AFB.

compatible. CMU exterior walls are advantageous because they provide a more durable exterior surface and a more quiet interior environment. A CMU building will also be compatible with others on-base.

Cost Estimate

For the reader's convenience, the costs for construction of the Edwards AFB artifact-collections facility are presented in Table 3.

The St. Louis District's cost estimate is based on a single-story, 4,356-ft², preengineered struc-

ture. The additional cost to put a masonry veneer on the perimeter is estimated at \$6.00 per ft² and will result in a preliminary cost estimate of \$322,080, rather than \$300,400. The cost estimate is preliminary and should be supplemented with additional details subsequent to facility design.

The estimated cost does not include furnishings such as shelving, map cases, storage cabinets, computer equipment, or a cable link to the Internet. These items can easily cost an additional \$200,000. The estimate also does not include site-development costs such as utility supply lines, sewer lines, electrical distribution, sanitary lift stations, or roads and parking-area development.

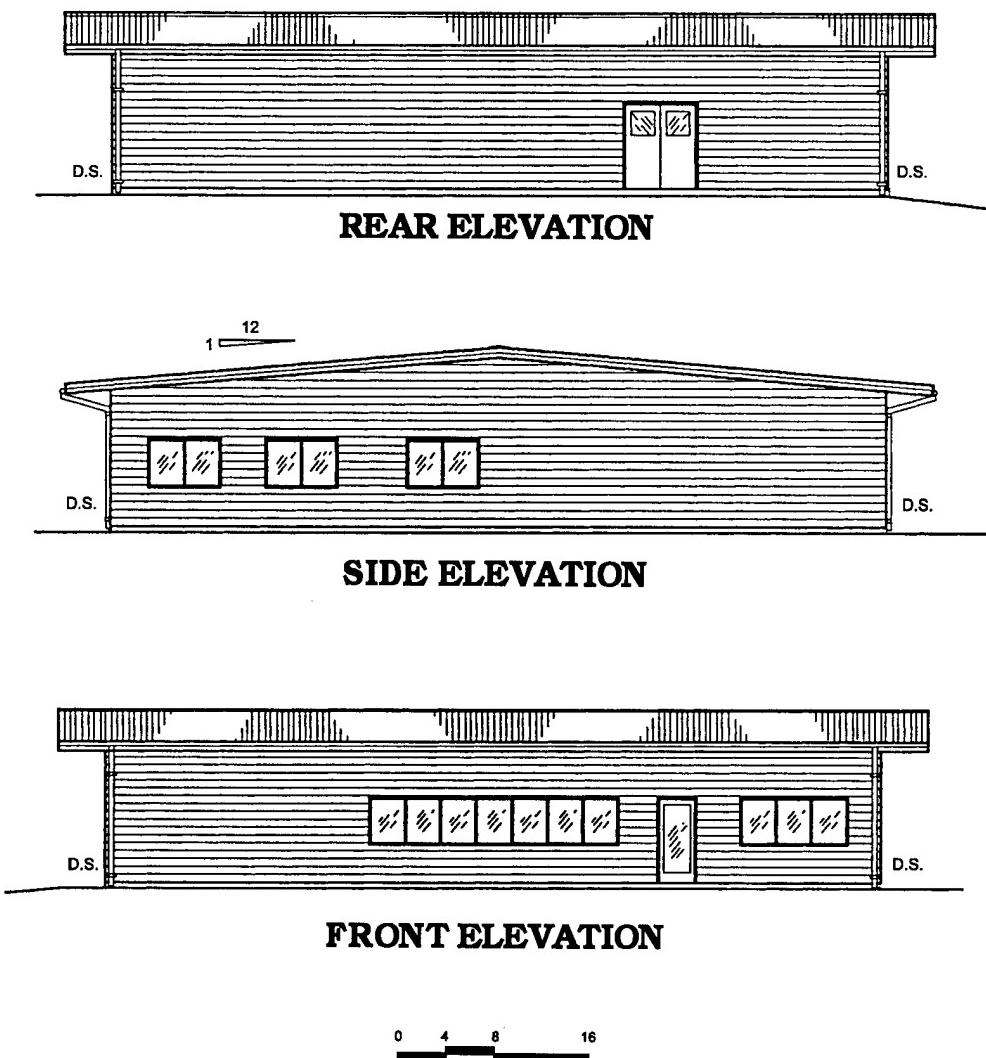


Figure 10. Elevation sketches of a potential concrete-masonry collections facility at Edwards AFB.

Table 3.
Construction Costs for a Preengineered Metal Building at Edwards AFB

Item	Quantity	Unit	Unit Price (\$)	Estimated Amount (\$)
Preengineered metal building 16-foot eave ht. (66 x 66 feet)				
Includes material, erection, & insulation	4,356	SF	6.20	27,007
Metal siding	4,224	SF	5.00	21,120
Site work (cut & fill & grading)	725	CY	7.00	5,075
Floor system				
Concrete floor slab, 6 inches	81	CY	180.00	14,580
Welded wire fabric, 6 x 6—W4 x W4 (58#/csf)	44	CSF	46.00	2,024
Crushed stone, 4 inches compacted	86	TON	15.00	1,290
Floor covering—vinyl	1,778	SF	1.70	3,023
Ceramic tile	400	SF	7.00	2,800
Wall foundation				
Concrete foundation wall	12	CY	250.00	3,000
Concrete reinforcement	1,440	LB	.80	1,152
Footings				
Concrete spread footings	15	CY	160.00	2,400
Concrete reinforcement	1,800	LB	.80	1,440
Sidewalk				
Concrete sidewalk—4 inches	3	CY	200.00	600
Welded wire fabric, 6 x 6—W4 x W4 (58#/csf)	3	CSF	46.00	138
Interior partitions—8-inch CMUs	5,400	SF	6.00	32,400
Interior painting—2 coats	11,600	SF	.60	6,960
Ceiling—suspended acoustical	4,356	SF	2.00	8,712
Doors (includes door frames for each)				
Doors—pair 3 x 7 feet	3	each	900.00	2,700
Doors—single 3 x 7 feet	18	each	500.00	9,000
Miscellaneous items				
Cabinetry	50	LF	200.00	10,000
HVAC	4,356	SF	8.00	34,848
Plumbing	sum	job		2,500
Sprinkler	sum	job		9,000
Electrical (elect. distribution, lighting)	4,356	SF	8.16	35,545
Security system	sum	job		3,000
Subtotal				240,314
Contingencies (~25%)				60,086
Total construction costs				300,400
Construction cost per ft ² (\$/ft ²)				69.00

Note: Price level October 1994.

Summary and Recommendations

This report identifies the collections facility conditions and problems at Edwards AFB; current standards for the care, maintenance, and management of artifacts and associated documentation; recommendations for resolving the problem; and a cost estimate for the recommended new building.

The existing collections building at Edwards AFB does not meet the standards of 36 CFR Part 79. Efforts to resolve the problem posed by the current facility include the evaluation of Building 16 as a replacement facility and an evaluation of six sites for the potential construction of a new building.

Because the existing repository and Building 16 are both inadequate as archaeological collections facilities, and because we believe the cost to bring either structure into compliance with 36 CFR Part 79 would be greater than the cost to construct a new building, we recommend the

construction of a new archaeological collections facility at Edwards AFB.

Of the six sites inspected, Site 4 is most appropriate for use as an archaeological collections facility. The site is near both the future flight test museum and known prehistoric archaeological sites, and is consistent with the cultural nature of land use in the area. Many people visiting the flight test museum will also spend time at the collections facility. The site is large enough to accommodate future expansion of the repository should that need arise. However, this site will not be the most economical to develop; although utilities are nearby, they are farther from this site than are utilities from Sites 5 and 6. In addition, a road and paved parking will be needed at this site. On the other hand, Sites 5 and 6 both have a road in place, and an existing parking area is available at Site 5.